**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A phosphor sheet for a radiation detector provided to be attached to a photoelectric conversion film of the radiation detector, comprising:

a support having a sheet shape; and

a phosphor layer which emits light in response to rays of radiation transmitted through a specimen, and including a layer coated on said support with powder of a rare earth oxysulfide phosphor activated by europium of concentration in a range of 0.01 mol% to 3.5 mol%, wherein the rare earth oxysulfide phosphor powder has an average particle size in a range of 2 μm to 15 μm, wherein a filling factor of the phosphor powder in the phosphor layer is in a range of 60% to 80%, and the phosphor layer has a thickness in a range of 80 to 300 μm, and the rare earth oxysulfide phosphor has a composition expressed by:

general formula: $(R_{1-a}Eu_a)_2O_2S$,

wherein, in the general formula, R is at least one kind of element selected from Gd, Lu, Y and La, and a is a number which satisfies $1 \times 10^{-4} \leq a \leq 3.5 \times 10^{-2}$,

wherein said phosphor layer has a surface that is configured to be bonded onto the photoelectric conversion film by an adhesive that transmits light, wherein the photoelectric conversion film includes an amorphous silicon film or a single crystal silicon film, wherein the surface has a surface roughness of 0.5 μm or less in average roughness Ra.

2. (Previously Presented) A phosphor sheet for a radiation detector according to claim 1,

wherein the europium concentration of the rare earth oxysulfide phosphor is in a range of 0.1 mol% to 2.0 mol%.

3. (Canceled)

4. (Original) A phosphor sheet for a radiation detector according to claim 1,

wherein the rare earth oxysulfide phosphor comprises at least one selected from a europium-activated gadolinium oxysulfide phosphor and a europium-activated lutetium oxysulfide phosphor.

5. (Canceled)

6. (Canceled)

7. (Canceled)

8. (Previously Presented) A phosphor sheet for a radiation detector according to claim 1, wherein the average roughness Ra of the surface of said phosphor layer is 0.3 μm or less.

9. (Canceled)

10. (Canceled)

11. (Currently Amended) A radiation detector, comprising:

a phosphor sheet configured to convert radiation rays transmitted through a specimen into light, wherein the phosphor sheet comprises:

a support having a sheet shape, and

a phosphor layer including a layer coated on said support with powder of a rare earth oxysulfide phosphor activated by europium of concentration in a range of 0.01 mol% to 3.5 mol%, wherein the rare earth oxysulfide phosphor powder has an average particle size in a range of 2 μm to 15 μm, wherein a filling factor of the phosphor powder in the phosphor layer is in a range of 60% to 80%, and the phosphor layer has a thickness in a range of 80 to 300 μm, and the rare earth oxysulfide phosphor has a composition expressed by:

general formula: $(R_{1-a}Eu_a)_2O_2S$,

~~wherein, in the general formula, R is at least one kind of element selected from Gd,~~ Lu, Y and La, and a is a number which satisfies $1 \times 10^{-4} \leq a \leq 3.5 \times 10^{-2}$,

a photoelectric conversion film on which said phosphor sheet is layered, and which converts the light from said phosphor sheet into electric charges, wherein the photoelectric conversion film comprises an amorphous silicon film or a single crystal silicon film; and

a charge information reading section having a plurality of pixels in contact with said photoelectric conversion film and reading out the electric charges generated on said

photoelectric conversion film for each of the plurality of pixels as image signals of the radiation rays,

wherein said phosphor layer has a surface bonded onto the photoelectric conversion film by an adhesive that transmits light, wherein the surface has a surface roughness of 0.5 μm or less in average roughness Ra.

12. (Canceled)

13. (Previously Presented) A radiation detector according to claim 11,

wherein each of the plurality of pixels comprises a pixel electrode, a charge storage capacitor storing the electric charges generated on said photoelectric conversion film via the pixel electrode, and a switching element provided corresponding to the charge storage capacitor, wherein the switching element reads out the electric charges.

14. (Original) A radiation detector according to claim 11,

wherein said radiation detector is a radiation plane detector with the plurality of pixels arranged in an array form.

15. (Canceled)

16. (Canceled)

17. (Canceled)

18. (Previously Presented) An apparatus for radiographic examination, comprising:

a radiation source irradiating radiation rays to a specimen; and

a radiation detector according to claim 11 configured to detect the radiation rays transmitted through the specimen as image signals.

19. (Canceled)

20. (Previously Presented) A phosphor sheet for a radiation detector according to claim 5,

wherein the average particle size of the rare earth oxysulfide phosphor powder is in the range of 6 μm to 10 μm.

21. (Previously Presented) A phosphor sheet for a radiation detector according to claim 1, wherein the phosphor layer is a slurry coated layer coated on the support from a slurry that includes the powder of the rare earth oxysulfide phosphor activated by europium.

22. (Previously Presented) A phosphor sheet for a radiation detector according to claim 21, wherein the slurry coated layer is a smoothed layer that has undergone a smoothing treatment after the slurry has been coated on the support so that the surface configured to be bonded onto the photoelectric conversion film has a surface roughness of 0.5 μm or less in average roughness Ra.

23. (Previously Presented) A radiation detector according to claim 11, wherein the phosphor layer is a slurry coated layer formed from a slurry that includes the powder of the rare earth oxysulfide phosphor activated by europium.

24. (Previously Presented) A radiation detector according to claim 23, wherein the slurry coated layer is a smoothed layer that has undergone a smoothing treatment after the slurry has been coated on the support so that the surface configured to be bonded onto the photoelectric conversion film has a surface roughness of 0.5 μm or less in average roughness Ra.